

# CITY OF BURBANK

## *Noise Element*

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## NOISE ELEMENT

of the

### **City of Burbank General Plan**

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Prepared by the City of Burbank Community Development Department  
Advance Planning Section  
and  
J. J. Van Houten and Associates, Inc., as consultants

Adopted by Burbank City Council on December 8, 1992  
Resolution No. 23,777



## VI. **NOISE ELEMENT**

### **TABLE OF CONTENTS**

<b>SECTION I - <u>SUMMARY OF THE ELEMENT</u></b> .....	1
<b>SECTION II - <u>INTRODUCTION</u></b> .....	3
<b>SECTION III - <u>AUTHORIZATION</u></b> .....	4
<b>SECTION IV - <u>PURPOSE</u></b> .....	5
<b>SECTION V - <u>GOALS STATEMENT</u></b> .....	6
<b>SECTION VI - <u>NOISE EVALUATION AND MEASUREMENT</u></b> .....	7
A. A-WEIGHTED SOUND LEVEL .....	7
B. COMMUNITY NOISE EQUIVALENT LEVEL (CNEL) .....	8
C. DAY-NIGHT SOUND LEVEL (Ldn) .....	8
D. ACCEPTABLE EXTERIOR NOISE EXPOSURES .....	9
E. ACCEPTABLE INTERIOR NOISE EXPOSURES .....	9
F. ANNOYANCE AND HEALTH CONSIDERATIONS .....	10
<b>SECTION VII - <u>FINDINGS</u></b> .....	14
A. NOISE SURVEY RESULTS .....	14
B. DAY-NIGHT SOUND LEVEL (Ldn) .....	15
C. FREEWAY AND HIGHWAY TRAFFIC NOISE .....	16
D. TRAFFIC NOISE FROM MAJOR AND SECONDARY ARTERIALS .....	16
E. AIRCRAFT NOISE FROM BURBANK-GLENDALE-PASADENA AIRPORT .....	17
F. NOISE FROM TRAIN MOVEMENTS ON THE SOUTHERN PACIFIC RAIL LINES .....	18
G. COMMERCIAL/INDUSTRIAL NOISE .....	18
H. CONSTRUCTION ACTIVITY .....	19
I. NOISE-SENSITIVE LOCATIONS .....	19
J. PROBLEM SUMMARY .....	20

SECTION VIII - NOISE MITIGATION POLICIES ..... 23

**FIGURES**

Figure 1: Typical Outdoor Sound Measured on a Quiet Suburban Street ..... 11  
Figure 2: Outdoor Noise Exposures at Various Locations ..... 12  
Figure 3: Noise/Land Use Compatibility Matrix ..... 13

**MAPS**

Map 1: Noise Sensitive Locations in the City of Burbank ..... 21  
Map 2: Railway Lines in the City of Burbank ..... 22  
Noise Level Contour Maps--Existing and Projected ... pull out at end of document

**APPENDICES**

I. REFERENCES ..... I-1  
II. DEFINITIONS ..... II-1  
III. EFFECTS OF NOISE ON PEOPLE ..... III-1

## I. SUMMARY OF ELEMENT

The purpose of the General Plan Noise Element is to identify, measure and propose solutions for the sources of intrusive noise throughout the City of Burbank. This is done by the City in recognition of the fact that noise, particularly excessive levels of noise, can have a detrimental effect on the health and welfare of its citizens, as well as to comply with state mandates.

To determine the existing level of noise in Burbank, measurements were taken at 31 locations throughout the City. Because of the sensitivity of the land use and the intrusive nature and level of noise involved, particular emphasis was placed on residential locations adjacent major arterial corridor areas, the airport and the rail lines.

These measurements indicate the following.

- Noise levels at residential locations in the vicinity of the Burbank-Glendale-Pasadena Airport are in excess of accepted standards.
- Train movements along the Coast Line branch of the Southern Pacific rail line produce excessive levels of noise at nearby residential locations.
- Traffic on the Route 5 and Route 134 freeways, though buffered by existing noise barriers, produces noise exposure levels in excess of accepted standards.
- Traffic on major arterials, particularly San Fernando Boulevard and Victory Boulevard, produces noise levels in excess of accepted standards. Residences adjacent these arterials are exposed to undesirable levels of noise.
- Fifteen schools and 17 other noise-sensitive locations throughout the City are exposed to noise levels in excess of accepted standards.

In recognition of these problems and to prevent future ones from developing, a policy program has been developed as follows.

- Encourage the construction of noise barriers along the Route 5 and Route 134 freeways at reaches directly adjacent residential units.

- Encourage the construction of noise barriers along the Southern Pacific Transportation Company rail line corridor where residences exist adjacent to the main track.
- The City will encourage the Southern Pacific Transportation Company to reduce the level of noise produced by train movements within the City.
- The City will encourage the continued implementation of noise control procedures by the Burbank-Glendale-Pasadena Airport and will advocate methods by which noise exposure to aircraft flyovers may be minimized within the City.
- The City will adopt and enforce development regulations and conditions of approval which include noise control for the exterior living space of all new residential developments within noise impact areas.
- The City will adopt and enforce development regulations and conditions for approval which include noise control for the interior living space of all new residential developments within noise impact areas.
- The City will apply the state's noise insulation requirements to the conversion of existing apartments into condominiums.
- The City will consider noise control requirements for all new equipment purchases.
- The City will ensure that future projects within the City will reflect a consciousness on the part of the City regarding the reduction of unnecessary noise near noise-sensitive areas, such as parks, hospitals, libraries, convalescent homes, etc.
- The City's Noise Ordinance will be periodically reviewed and updated to reflect changes in state law and public consciousness concerning noise.
- The City will implement a review process concerning policies and regulations affecting noise.
- The City will encourage agencies to observe the state and federal occupational safety and health noise standards.
- The City will enforce regulations (such as the State Vehicle Code noise standard) for all privately-owned, City-owned, and City-operated automobiles, trucks and motorcycles operating within Burbank.

Each of these policies is discussed in detail in Section VIII of this Element.

## **II. INTRODUCTION**

Physical health, psychological stability, social cohesion, property values, and economic productivity are factors affected by excessive amounts of noise. Noise, as it has been simply defined, is "unwanted sound". It is an undesirable by-product of transportation elements and the variety of urban activities within the community that permeates environment and causes disturbance. The full effect of such noise on the individual and the community will vary with its duration, its intensity, and the tolerance level of the individual.

### **III. AUTHORIZATION**

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Recognizing the increasing human environmental impacts of noise pollution and the impact that local agency land use and circulation plans have on the community's environmental quality, the California Legislature, in 1972, mandated that a noise element be included as part of city and county General Plans. Guidelines have been prepared as a result of Senate Bill 860(A) (effective January 1, 1976) by the Office of Noise Control, State Department of Health, concerning the specific requirements for a noise element which is responsive to state law. Within the City of Burbank, the Community Development Department is responsible for the coordination of all local noise control activities.

## **IV. PURPOSE**

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The purpose of the Noise Element is to serve as an official guide to the City Council, the Planning Board, City departments, individual citizens, business people, and private organizations concerned with noise pollution within the City of Burbank. The Noise Element provides a reference to be used in connection with actions on various public and private development matters as required by law, and is utilized to establish uniformity of policy and direction within the City concerning actions to minimize or eliminate excessive noise and for making decisions regarding proposals which may have an impact on the City's environment.

The Noise Element includes definitions, objectives, policies, standards, criteria, programs and maps which are to be considered when decisions are made affecting the noise environment within the City of Burbank.

## V. GOALS STATEMENT

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- To provide sufficient information concerning the community noise environment so that noise may be effectively considered in the land use planning process.
- To provide information for the continuing enforcement of the City Council's policy concerning noise control in residential construction.
- To develop strategies for the abatement of excessive noise exposures.
- To protect those existing regions of the City for which the noise environment is deemed acceptable and those locations throughout the City which are deemed "noise-sensitive".
- To establish the existing and projected community noise environment (in the form of noise contours) for local compliance with the state-mandated noise insulation standards.
- To encourage the reduction of noise from all sources such as motor vehicles, industrial/commercial activities, and home appliances.
- To provide a quality environment in which the citizens of Burbank may live.
- To achieve compatibility between airport-generated noise and adjacent land uses.

The sections that follow provide a discussion of the methods used to measure and analyze the noise environment of Burbank. The results of the analysis will then be compared with accepted standards to determine where the City is affected by adverse levels of noise. This will lead to a description of a policy and action program designed to minimize (or eliminate) these adverse levels and prevent future problems from occurring, thereby working toward the achievement of the above-stated goals.

## VI. NOISE EVALUATION AND MEASUREMENT

A description of the character of a particular noise requires the following:

1. The amplitude and amplitude variation of the acoustical wave;
2. The frequency (pitch) content of the noise, and;
3. The duration of the noise.

Definitions of the most commonly used terms encountered in community noise assessments and noise control are provided in Appendix II. Of these terms, the A-weighted sound pressure level (identified as dB[A]) is the scale of measurement which is most useful in community noise measurement. This sound level is measured in decibels to provide a scale within the range and characteristics most consistent with that of people's sensitivity to sounds.

The A-weighted sound level, its application to the Ldn measure of noise exposure used in this Element, and its utility of ambient noise levels are discussed in the remainder of this section.

### A. A-WEIGHTED SOUND LEVEL

To establish the A-weighted sound level, the acoustical signal is detected by the microphone and then filtered to weight those portions of the noise which are most annoying to individuals. This weighting of sound energy corresponds approximately to the relative annoyance experienced by humans from noise at various frequencies. The sound levels of a few typical sources of noise which are routinely experienced by people within the City of Burbank are listed in Figure 1.

The A-weighted sound level of traffic noise and other long-term noise producing activities within and around a community varies considerably with time. Measures of this varying noise level are accomplished by obtaining statistical samples. For the purposes of this study, the following statistical values have been used.

$L_{90}$  The near minimum sound level. This value is exceeded 90 percent of the time during the measurement period.

- $L_{50}$  The central tendency of the sound level. This value is exceeded 50 percent of the time during the measurement period.
- $L_{10}$  The near maximum sound level. This value is exceeded ten percent of the time during the measurement period.
- $L_{eq}$  The energy equivalent sound level. This value is most representative of the long-term annoyance potential as well as other effects of the noise.

These measurements may be recorded so as to obtain representative samples of the noise during certain time periods (e.g., peak traffic period, morning, afternoon, night, etc.).

## **B. COMMUNITY NOISE EQUIVALENT LEVEL (CNEL)**

It is recognized that a given level of noise may be more or less tolerable depending on the duration of exposure and the time of day during which the noise is experienced. There are several measures of noise exposure which consider not only the variation of noise level but also include temporal characteristics. Of these, the State Department of Aeronautics and the California Commission of Housing and Community Development have adopted the CNEL. This measure weights the average noise level for the evening hours (from 7:00 p.m. to 10:00 p.m.) by 5 dB, and the late evening and early morning hours (from 10:00 p.m. to 7:00 a.m.) by 10 dB. The unweighted daytime noise levels are combined with these weighted levels and averaged to obtain a CNEL value. Figure 2 indicates the outdoor CNEL at typical locations throughout the Southern California area.

## **C. DAY-NIGHT SOUND LEVEL (Ldn)**

The United States Environmental Protection Agency (EPA) has adopted a federal policy of noise control and acceptable levels of noise exposure. The measure of exposure used by the EPA is the day-night sound level, Ldn. The Ldn measure of noise exposure is also used by the U.S. Department of Housing and Urban Development (HUD), the Federal Aviation Administration (FAA), and the U.S. Department of Defense. This measure is essentially an average of the A-weighted

sound levels experienced for each 24-hour period. Late evening and early morning (10:00 p.m. to 7 a.m.) noise levels are more annoying and therefore, are increased by 10 dB and averaged along with day-time levels. This measure differs from the CNEL value only by the elimination of the 5 dB of addition weighting applied to noise experienced during the hours from 7:00 p.m. to 10:00 p.m. For most transportation noise sources, the two measures, CNEL and Ldb, are essentially equal and are used interchangeably throughout this Noise Element. This is consistent with procedures recommended by the State of California Office of Noise Control. Figure 2 indicates the outdoor CNEL and Ldn at typical locations throughout the Southern California area.

## **D. ACCEPTABLE EXTERIOR NOISE EXPOSURES**

Figure 3 indicates the Ldn considered acceptable for various land use categories. In general, exterior noise exposures at residential locations should not exceed an Ldn of 60 dB.

The EPA has recommended a policy stating that an Ldn of 55 dB not be exceeded within exterior living spaces. However, the EPA emphasizes that this level of exposure may not be economically feasible, nor, in many cases, a practical level to achieve.

## **E. ACCEPTABLE INTERIOR NOISE EXPOSURES**

California's noise insulation standards were officially adopted by the California Commission of Housing and Community Development in 1974 and became effective on August 22, 1974. On November 14, 1988, the Building Standards Commission approved revisions to these standards (Title 24, Part 2, California Code of Regulations). The ruling states

Interior noise levels attributable to exterior sources shall not exceed 45 dB in any habitable room. The noise metric shall be either...Ldn or...CNEL, consistent with the noise element of the local general plan.

Additionally, the Commission specifies that residential buildings or structures to be located within exterior CNEL (or Ldn) contours of 60 dB or greater of an existing or adopted freeway, expressway, parkway, major street, thoroughfare, rail line, rapid transit line, or industrial noise source shall require an acoustical analysis showing that the building has been designed to limit intruding noise to an interior CNEL (or Ldn) of 45 dB.

## **F. ANNOYANCE AND HEALTH CONSIDERATIONS**

In general, noise may affect the average individual in the following ways.

- General hearing loss or damage. Sound levels which exceed 85 dB(A), when experienced for long durations during each working day, may result in severe temporary or even permanent hearing loss. state and federal safety and health regulations currently protect workers at levels of exposure which exceed 90 dB(A) for each eight-hour workday.
- Interference with oral communication. Speech intelligibility is impaired when sound levels exceed 60 dB(A). The amount of interference increases with sound level and distance between speaker and listener.
- Sleep interference. Sound levels which exceed 40 to 45 dB(A) are generally considered to be excessive for sleeping areas within a residence.

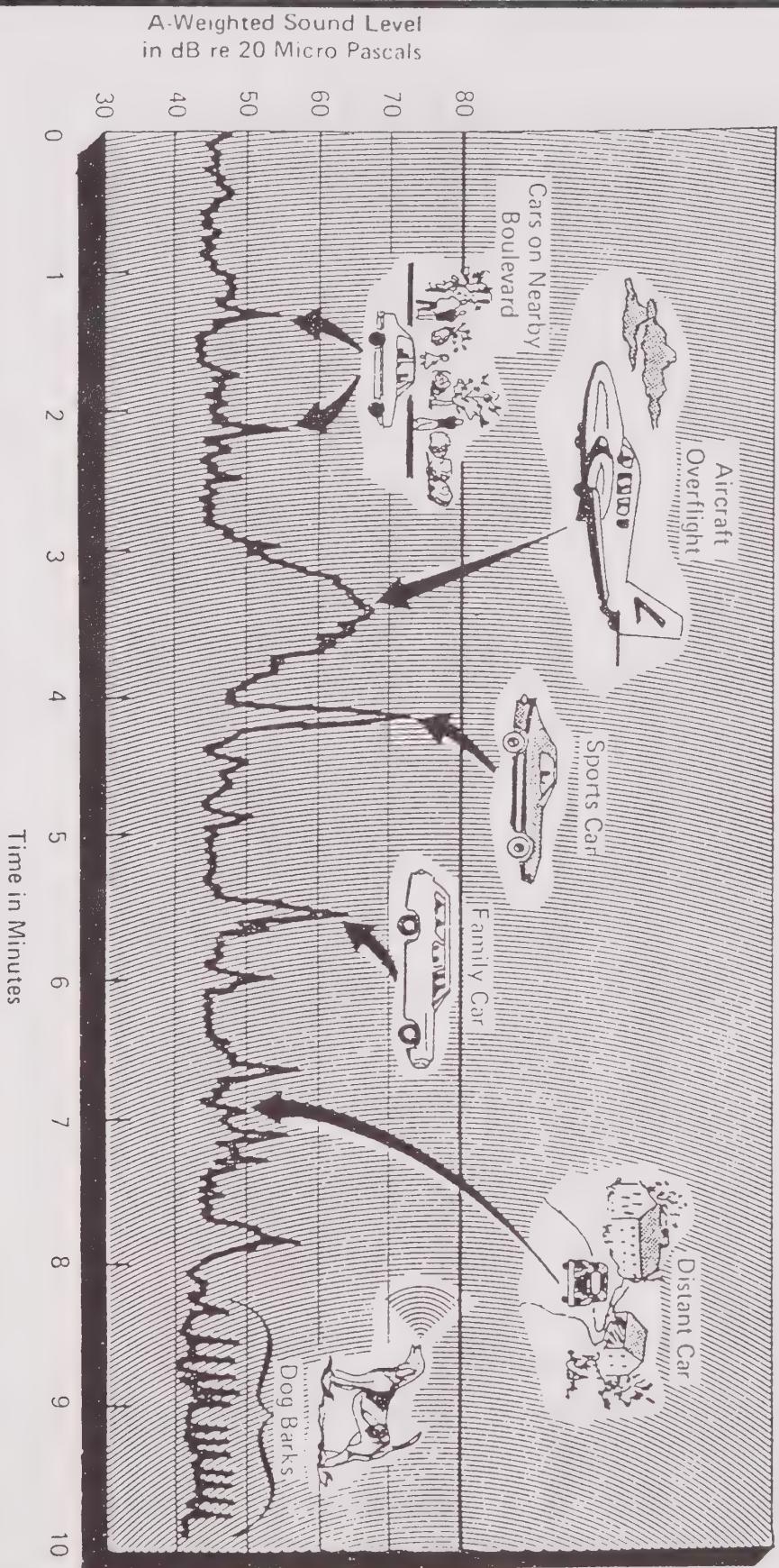


Figure 1: Typical Outdoor Sound Measured on a Quiet Suburban Street

# CNEL/LDN IN DB OUTDOOR LOCATION

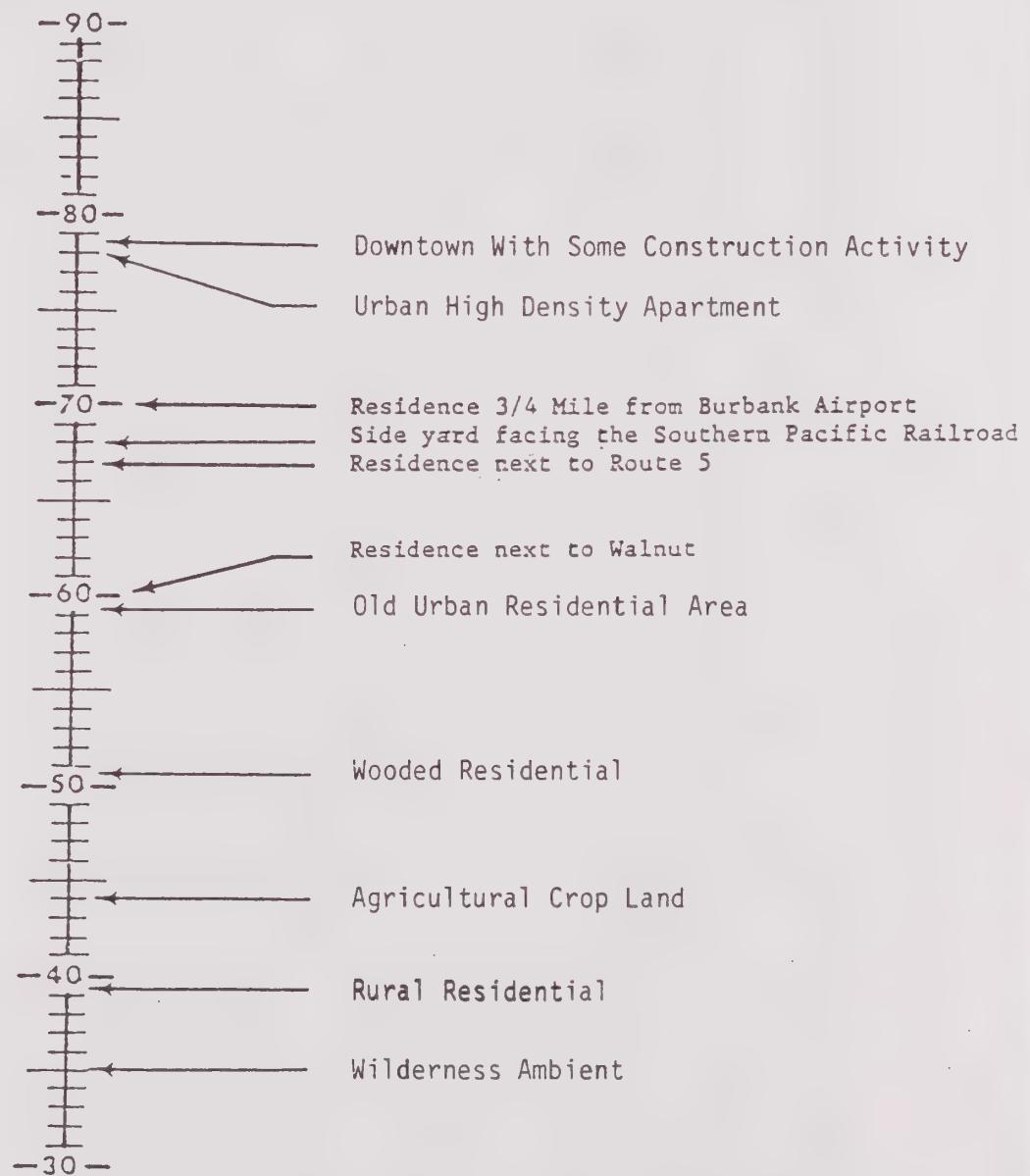
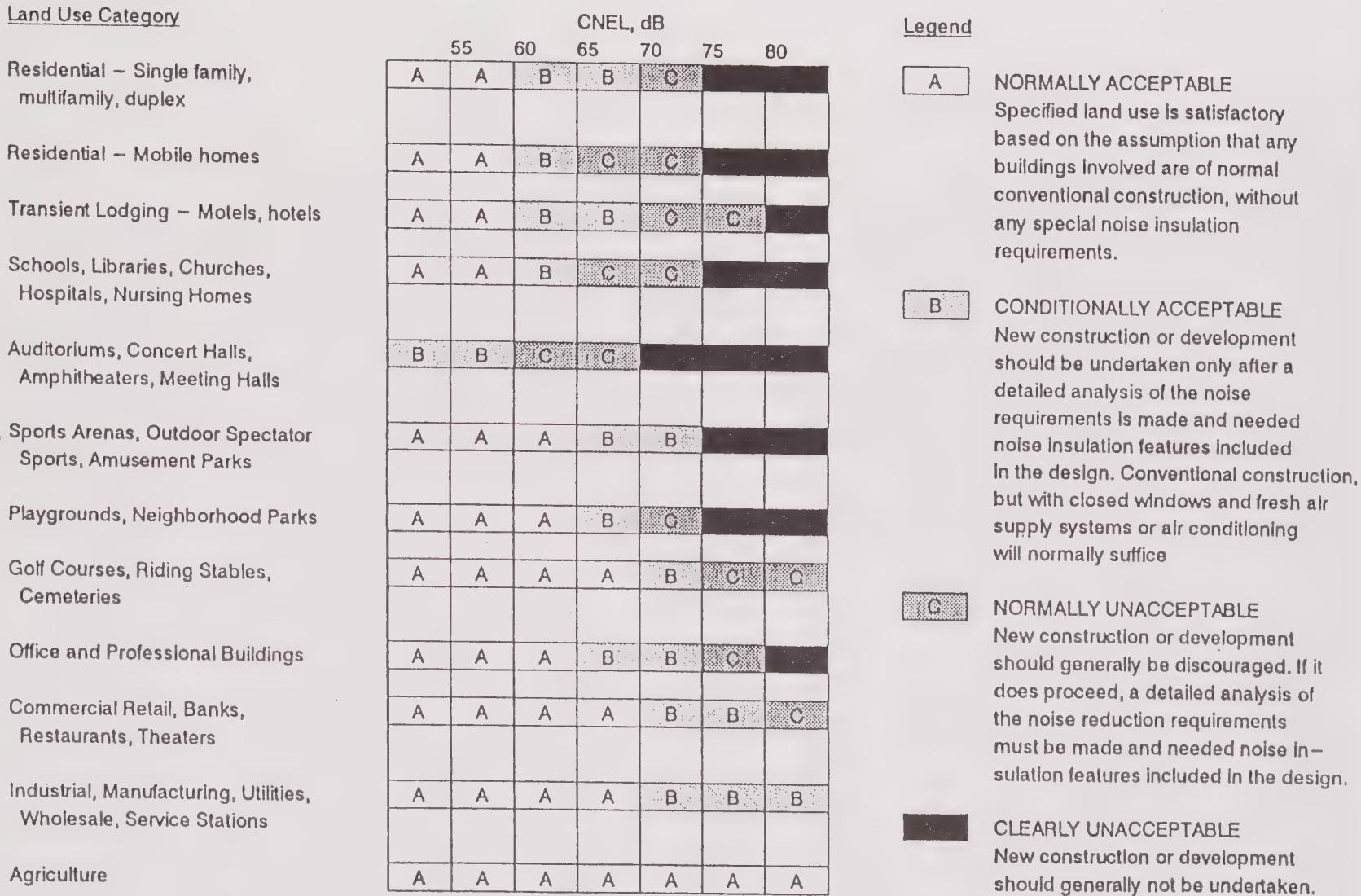


Figure 2: Outdoor Noise Exposures at Various Locations

Figure 3: Noise/Land Use Compatibility Matrix



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## VII. FINDINGS

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The most significant noise-producing activity within the City of Burbank involves the various elements of transportation: arterials, the freeways, the airport and the rail lines. In addition, numerous fixed sources of noise exist within portions of the City. The following section provides a discussion of the noise measurements obtained and an inventory of noise sources within the City. From these measurements and complementing analytical procedures, noise exposure contours have been derived for the City and noise impact areas have been identified (see noise level contour maps at the end of Element).

### A. NOISE SURVEY RESULTS

Various locations within Burbank were surveyed in June and July, 1989, to establish the existing levels of noise. These measurement sites were selected to determine the impact of noise on residential areas due to traffic on the major arterials (including the freeways), train movements on the Southern Pacific rail lines, and flight operations at Burbank-Glendale-Pasadena Airport. A total of 31 noise measurements were obtained, six of which were 24-hour samples.

The following provides an inventory of noise sources measured within Burbank and the ranges of peak sound levels generated by these sources.

NOISE SOURCE	RANGE OF SOUND LEVELS
Aircraft flyover	76 to 100 dB(A)
Truck leaving plant on private property at 50 feet	78 to 88 dB(A)
Trash pick up at 100 feet	75 to 95 dB(A)
Truck on City streets at 50 feet	80 to 88 dB(A)
Transit bus at 50 feet	72 to 73 dB(A)
Motorcycles at 50 feet	72 to 82 dB(A)
Sports cars at 50 feet	55 to 85 dB(A)
Traffic on main arterials at 50 feet	60 to 80 dB(A)
Traffic on freeway at 50 feet	80 to 85 dB(A)
Locomotive passby	84 to 86 dB(A)
Car horn sounding	76 to 90 dB(A)

These noise sources were measured at various locations throughout the City. Therefore, the noise levels are not necessarily indicative of any particular area or location.

## B. DAY-NIGHT SOUND LEVEL (Ldn)

Ldn contours have been derived for major arterials within the City of Burbank and are provided in Appendix V. The methodology utilized for traffic noise evaluation is based on a simplified version of the Federal Highway Administration Traffic Noise Model (FHWA-RD-77-108) and studies conducted by Wyle Laboratories. Ldn contour maps have been prepared and can be found at the end of this Element. These maps provide Ldn contours ranging from 60 to 85 dB in 5 dB increments for the existing and projected (buildout) noise environments.

Another primary source of noise in the City is flight operations at Burbank-Glendale-Pasadena Airport. Noise contours for this activity have been obtained from the FAR Part 150 study for the airport and are displayed on the noise level contour maps (References Nos. 10 and 11 in Appendix 1).

In addition to the above sources, a significant part of the noise experienced within the City is produced by train movements on the Southern Pacific rail lines. The rail line Ldn contour distances provided in Appendix V were developed based on Wyle Laboratories' computational procedure (Report No. WCR-73-5) and train activity data supplied by Southern Pacific Transportation Company. Rail line contours are also depicted on the noise contour maps.

It should be noted that the contour maps do not take into consideration the barrier effect provided by homes or buildings adjacent the arterials. (However, the freeway noise contours do include the barrier effect of the existing sound walls.) Therefore, at homes which are exposed to noise from both an arterial and the airport, and which are located one or more rows back from the arterial, the airport will be the predominant noise source of concern.

## **C. FREEWAY AND HIGHWAY TRAFFIC NOISE**

The majority of homes adjacent the Route 5 freeway are buffered by existing sound walls. At these locations, the Ldn values are in the range of 65 to 70 dB. The results of a 24-hour measurement in this area indicate an Ldn of about 67 dB at one residence. Measurements obtained at a residence adjacent the Route 134 Freeway also indicates an existing Ldn of 67 dB. These levels are greater than is considered acceptable for a residential area.

## **D. TRAFFIC NOISE FROM MAJOR AND SECONDARY ARTERIALS**

The Ldn values at residential locations directly adjacent the following arterials exceed 65 dB. Hence, the noise exposure at these areas is considered excessive.

ARTERIAL	REACH
Alameda Avenue	Keystone Street to Eastern City Limit
Buena Vista Street	Glenoaks Boulevard to Alameda Avenue
Glenoaks Boulevard	Kenneth Road to Harvard Road
Hollywood Way	Pacific Avenue to Alameda Avenue
Magnolia Boulevard	Glenoaks Boulevard to Sunset Canyon
Main Street	Verdugo Avenue to Riverside Drive
Olive Avenue	Virginia Avenue to Sunset Canyon
Riverside Drive	Hollywood Way to Southeastern City Limit
San Fernando Boulevard	Route 5 to Scott Road
Verdugo Avenue	Clybourn to Sunset Canyon
Victory Boulevard	Western City Limit to Main Street
Victory Place	Verdugo Avenue to Alameda Avenue

## **E. AIRCRAFT NOISE FROM BURBANK-GLENDALE-PASADENA AIRPORT**

As indicated in Volume 1 of the Part 150 Study (Reference No. 10 in Appendix 1), existing (1990) flight operations at the Burbank-Glendale-Pasadena Airport generate a significant impact at residential locations south of the airport and to a lesser extent east of the airport. However, because the flight tracks extend over a significant portion of the City, there are few areas that are not affected by these operations. Currently, residents in the vicinity of the airport are exposed to an Ldn in the range of 65 to 75 dB. This range of levels is greater than is considered acceptable and will compromise the welfare of residents exposed for long period of time. Future (year 2000) operations at the airport will increase the number of homes exposed to an Ldn in excess of accepted standards, per the noise contours in Volume 2 of the Part 150 study (Reference No. 11 in Appendix 1). The airport will continue to work with the state towards achieving compliance with state noise standards.

## **F. NOISE FROM TRAIN MOVEMENTS ON THE SOUTHERN PACIFIC RAIL LINES**

Currently, there are approximately 27 trains per day coming into Burbank on the Main Line branch of the Southern Pacific rail line. This splits into 12 trains per day on the Coast Line and 15 on the Valley Line. In addition, there are two local switcher operations per day on the Chatsworth Branch. A map of these railway lines can be found on page 22. At this level of activity, a significant impact exists at residences adjacent the Coast Line, where the Ldn ranges from 65 to 75 dB. This is greater than is considered acceptable for residential areas. Late night and early morning train passes are the primary source of annoyance to residents who live adjacent the tracks.

Burbank is currently served by a total of four Amtrak intercity passenger trains. The trains currently stop at the Burbank-Glendale-Pasadena Airport platform along Empire Avenue. In October of 1992, the Los Angeles Transportation Commission (LACTC) will start commuter rail service through Burbank. Three trains will run along the Valley Line from Santa Clarita and four trains will run along the Coast Line from Moorpark each morning with the same number of trains returning each afternoon. All trains will stop at the downtown Burbank train depot on Front Street. With the opening of the downtown depot, Amtrak will shift its service from the airport platform to the downtown platform.

An electric light rail line is proposed to run along the Main and Valley lines from downtown Los Angeles to the Burbank-Glendale-Pasadena Airport. This line would provide service to the downtown depot with proposed stops in the Golden State area and at Hollywood Way, serving the new airport terminal.

Any future impact will be directly related not only to the number of operations occurring each day, but also to the time of day at which they occur. A significant increase in nighttime operations will have a detrimental effect on the noise environment of adjacent properties.

## **G. COMMERCIAL / INDUSTRIAL NOISE**

In general, commercial/industrial noise within the City is not considered excessive. However, where residential locations are adjacent heavy industrial zones or trucking operations, a significant impact could exist.

This impact is primarily related to noise generated by loading dock operations, trucks entering and leaving the area, and mechanical equipment located both inside and outside the building(s).

## **H. CONSTRUCTION ACTIVITY**

The impact of construction noise which occurs during the daytime is considered minimal for no more than two or three months of activity. However, late night and weekend disturbance caused by construction noise may cause a significant impact when experienced by nearby residential locations.

## **I. NOISE-SENSITIVE LOCATIONS**

In general, the sound levels at noise-sensitive locations within the City are not considered excessive. However, the following are sensitive uses and are located within a 65 dB Ldn contour.

1. St. Joseph Medical Center
2. Northwest Library
3. Verdugo Park
4. Northwest Park
5. John Burroughs High School
6. St. Finbar School on Olive
7. Joslyn Center on Olive
8. Izay Park
9. County Court House on Olive
10. Central Library
11. Thompson Memorial Hospital
12. Buena Vista Park
13. Mountain View Park
14. McCambridge Park
15. Buena Vista Library
16. Providence High School
17. Burbank High School
18. George Washington School
19. Vickroy Park
20. Abraham Lincoln School
21. Pacific Park

22. Luther Burbank Jr. High School
23. Mingay School
24. Monterey Avenue School
25. Valley Park
26. Ralph Foy Park
27. Walt Disney School
28. William McKinley School
29. Theodore Roosevelt School
30. Joaquin Miller School
31. Emerson School
32. Bret Harte School

These locations have been mapped in Map 1, page 21.

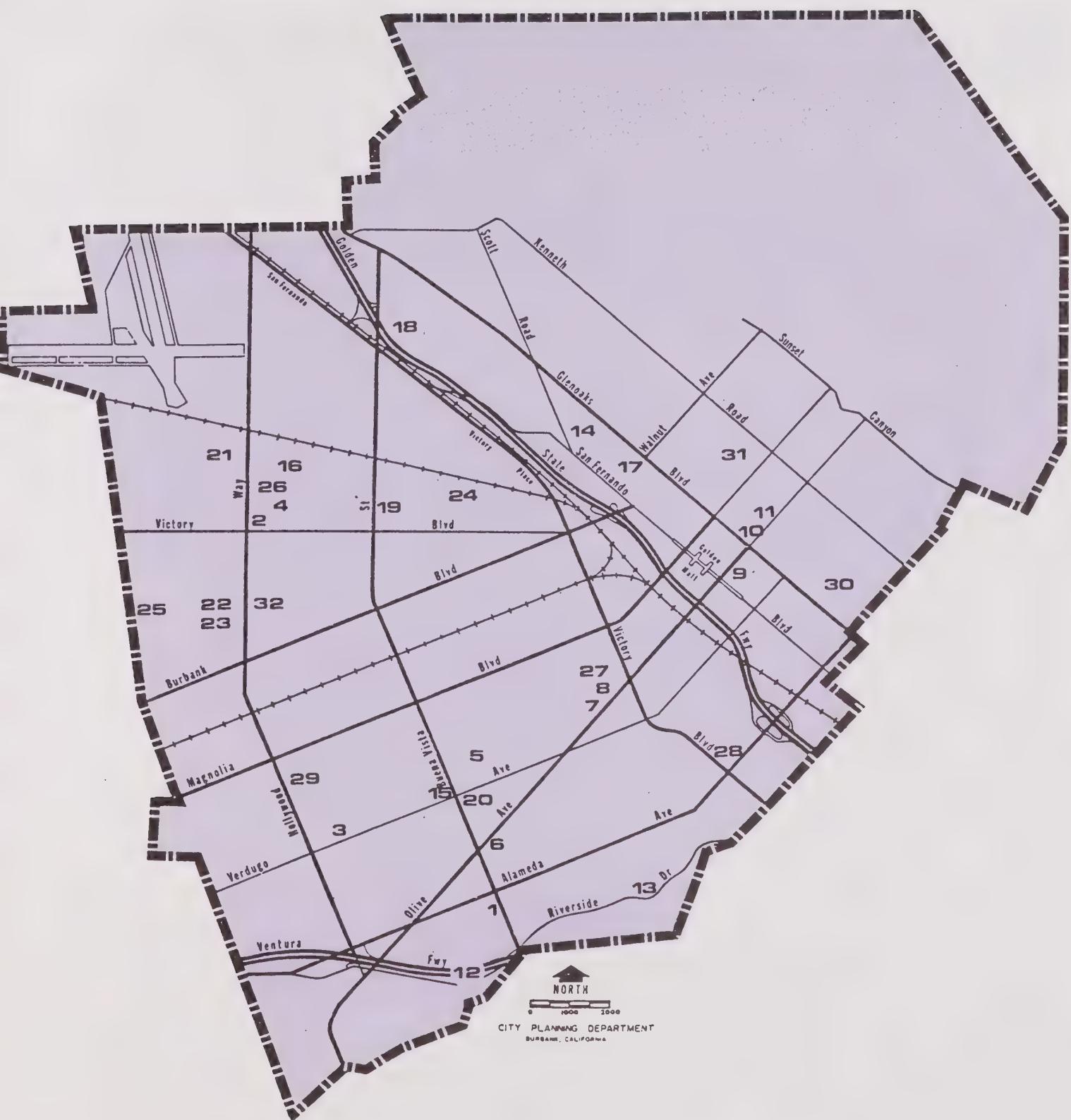
## **J. PROBLEM SUMMARY**

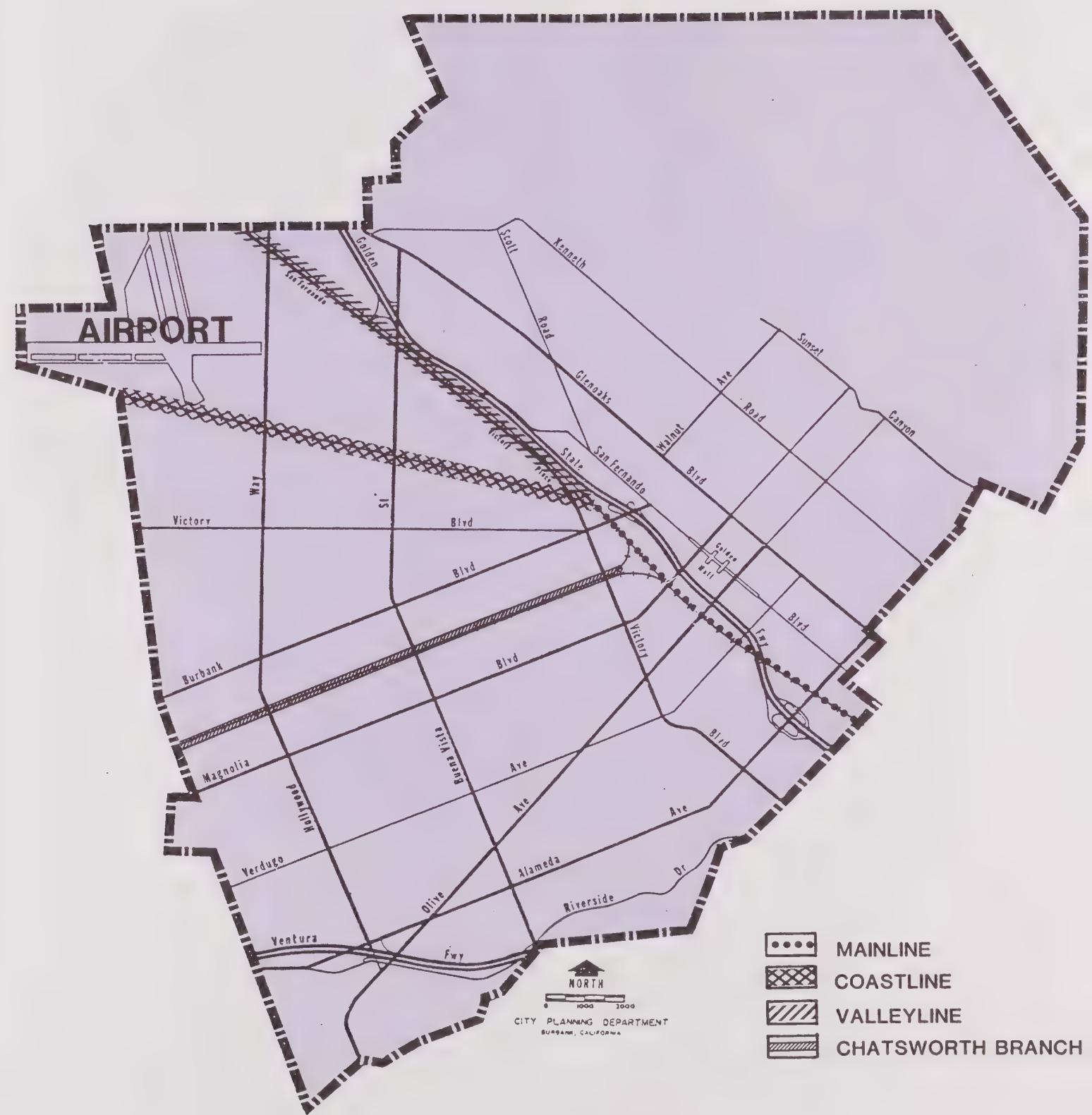
In the City of Burbank there are five major sources of noise:

- Traffic on the major arterials within the City;
- Flight operations at Burbank-Glendale-Pasadena Airport;
- Train movements on the Southern Pacific rail lines;
- Traffic on the Route 5 and Route 134 freeways;
- Trucking operations and mechanical equipment associated with commercial/industrial activities adjacent residential locations.

Of these, the most serious problems are the noise levels produced by traffic on the Route 5 and Route 134, and noise resulting from the Burbank-Glendale-Pasadena Airport. An Ldn of 65 to 75 dB exists at residential sites in the vicinity of the airport. Noise levels ranging from Ldn 70 to 85 dB exist adjacent the freeways. This compromises the welfare of citizens in these areas and should be corrected, if possible.

The Noise Element has identified a number of noise-related problems and issues within the City. The Policy Program consists of policies and implementation techniques which will minimize these problems and address these issues. Short-term possibilities for noise reduction in Burbank consist mostly of enforcement of the existing noise control regulations and the appropriate placement of walls and berms to buffer residential and other noise-sensitive areas from traffic and rail line noise. Long-term possibilities for noise reduction will be contingent upon future development, especially along major traffic routes and in the vicinity of the airport and the Southern Pacific rail lines. Planning now can help to minimize the future impact of noise on the community.





Map 2: Railway Lines in the City of Burbank

## VIII. NOISE MITIGATION POLICIES

### A. ENCOURAGE THE CONSTRUCTION OF NOISE BARRIERS ALONG THE ROUTE 5 AND 134 FREEWAYS AT REACHES DIRECTLY ADJACENT RESIDENTIAL UNITS

*Discussion --* Residential locations directly adjacent the Routes 5 and 134 freeways are exposed to traffic noise in excess of 65 dB. Over 1,500 residential properties are adversely affected by freeway noise levels over 65 dB CNEL. Eight hundred fifty of those experience noise levels over 70 dB CNEL. It is anticipated that the number of residential properties adversely affected will increase by about 10 percent over the next several years. Noise barriers as high as 12 to 15 feet are needed at affected locations to reduce the noise to acceptable levels. Along Route 5, construction of a sound barrier, to be effective and economically feasible, must be as close as possible to the near lane of traffic. This requires the actual construction of the barrier on the freeway right-of-way which is under state jurisdiction. Such construction requires the approval of, cooperation of, and coordination with the State Department of Transportation. Because of the geometry adjacent Route 134 Freeway, there are some areas where it is not practical to mitigate the noise exposure at adjacent homes with a barrier located within the Caltrans right-of-way. The construction of barriers in these areas would require the approval of all the homeowners in the area.

The City continues to request additional sound barriers from Caltrans. Current plans include a sound wall along the west side of the Route 5 Freeway from Alameda Avenue to Western Avenue, scheduled for construction by the year 2000, and a sound wall on the north side of the 134 Freeway parallel to Valley Heart Drive which would be constructed after the year 2000. Other areas of the City in which the City has asked Caltrans to construct noise barriers are on the north side of the 134 Freeway in the vicinity of the Rancho properties, Disney and from Hollywood Way west to the City boundary. The City will continue to work for the construction of noise barriers in these areas.

In areas where the City desires to have a noise barrier constructed before the scheduled Caltrans construction date, or where Caltrans has

no plans to construct a noise barrier, the City can fund construction and Caltrans would reimburse the City at the later date if construction was originally scheduled at the later date.

*Action -- The City will continue to encourage the construction by Caltrans of noise barriers along the Route 5 and 134 freeways bordering residential units.*

**B. ENCOURAGE THE CONSTRUCTION OF NOISE BARRIERS ALONG THE SOUTHERN PACIFIC TRANSPORTATION COMPANY RAIL LINE CORRIDOR WHERE RESIDENCES EXIST ADJACENT THE MAIN TRACK**

*Discussion -- Residential locations directly adjacent the rail line are exposed to elevated noise levels of up to 90 dB(A) for a brief time during train passbys, with average noise levels on the order of about 80 dB(A). The construction of noise barriers with heights of 13 to 15 feet would be effective as a noise reduction measure. Construction of a sound barrier must be as close as possible to the track in order to be effective and economically feasible. This requires the actual construction of the barrier on the rail line right-of-way which is under the management of the Southern Pacific Transportation Company. Such construction requires the approval of, cooperation of, and coordination with the Southern Pacific Transportation Company.*

Southern Pacific has not been in the practice of constructing noise barriers along its rail lines. Noise barriers have been constructed, however, by cities or private development to protect adjacent residential areas. Burbank will continue to explore the possibility of having Southern Pacific construct sound barriers in Burbank. In addition, noise barriers will be required of any major new residential development adjacent the rail lines.

*Action -- The City will explore the possibilities of having noise barriers constructed in residential areas where existing homes are directly adjacent the main track.*

**C. ENCOURAGE THE SOUTHERN PACIFIC TRANSPORTATION COMPANY TO REDUCE THE LEVEL OF NOISE PRODUCED BY TRAIN MOVEMENTS WITHIN THE CITY**

*Action -- The Public Works Department will encourage the Southern Pacific Transportation Company to minimize the level of noise produced by existing train movements. This can be accomplished by regular maintenance of the track and trains and the controlled use of horns, bells and whistles.*

**D. ENCOURAGE THE CONTINUED IMPLEMENTATION OF NOISE CONTROL PROCEDURES BY THE BURBANK- GLENDALE-PASADENA AIRPORT AND ADVOCATE METHODS BY WHICH NOISE EXPOSURE TO AIRCRAFT FLYOVERS MAY BE MINIMIZED WITHIN THE CITY**

*Action -- The City will work with the Airport Authority to review any plans for future development of the Burbank-Glendale-Pasadena Airport. Any actions that increase the level of noise throughout the adjacent area beyond the presently defined projected year 2000 noise impact boundary identified in the FAR Part 150 Noise Compatibility Program, Volume 2, for the airport will be discouraged. This includes increased flight operations and flight paths that pass over residential areas. The City will encourage and participate, where appropriate, in the noise mitigation measures identified in the FAR Part 150 Noise Compatibility Program, Volume 2.*

**E. ADOPT AND ENFORCE DEVELOPMENT REGULATIONS AND CONDITIONS OF APPROVAL WHICH INCLUDE NOISE CONTROL FOR THE EXTERIOR LIVING SPACE OF ALL NEW RESIDENTIAL DEVELOPMENTS WITHIN NOISE IMPACT AREAS**

*Discussion -- Portions of the City are significantly affected by noise as shown in the noise contour maps. The more affected areas include the Routes 5 and 134 freeway corridors and the major arterial*

corridors. Additionally, portions of areas adjacent the airport and the rail lines are significantly affected.

As called for in the California Noise Standards, an acoustical analysis should be required for all new residential developments within the 60 dB Ldn contour of the freeways, highways, arterials, airport and rail lines within the City. Existing City codes require this acoustical analysis only of multiple family residential developments. This analysis is required to indicate the existing and projected Ldns on the site and, if they are greater than 65 dB, the analysis must show the method(s) by which the noise is to be controlled or reduced to no more than 65 dB within the exterior living space of the project.

Noise should be considered early in the development of new residential or noise-sensitive uses. The location and orientation of the residential buildings may be configured to minimize or eliminate a noise problem for a site adjacent the freeway, major highways or rail line. Other effective noise reduction tools include the use of earthen berms, sound reducing walls, and generous setbacks from noise sources.

*Action -- The City will adopt and enforce development regulations and conditions of approval that require an acoustical analysis for all new residential developments within the 60 dB Ldn contour of the freeways, arterials, airport and rail lines. The analysis will state the measures by which the overall noise exposure within the exterior living spaces will be reduced. Residential development within the 65 dB contour will be expected to reduce exterior noise levels to the extent feasible.*

**F. ADOPT AND ENFORCE DEVELOPMENT REGULATIONS AND CONDITIONS FOR APPROVAL WHICH INCLUDE NOISE CONTROL FOR THE INTERIOR LIVING SPACE OF ALL NEW RESIDENTIAL DEVELOPMENTS WITHIN NOISE IMPACT AREAS**

*Discussion -- As stated earlier in the Noise Element, noise insulation standards were adopted by the state in 1974 and revised in 1988. They apply to all new multi-family dwelling units (apartments, condominiums, motels, etc.). The exterior-to-interior noise control requirements of the standards should be applied to all new single family structures as well.*

The residential design should be such that the interior living spaces are exposed to an Ldn of no more than 45 dB. This may be accomplished by:

- A reduction of the exterior noise to which the dwelling is exposed;
- Installing sound-rated windows suitable for the noise reduction required;
- Configuring and insulating exterior walls and roofing systems to reduce the interior noise to acceptable levels;
- Locating (or eliminating) vents, mail slots, etc., to minimize sound propagation into the home; and
- Installing forced air ventilation as needed to provide a habitable living space if the interior Ldn is to be met with all or some windows closed.

*Action* -- The City will adopt and strictly enforce development regulations and conditions of approval which require that the noise exposure within the interior living space of any new single or multi-family residential development not exceed an Ldn of 45 dB. Currently, Article 18 of the City's Municipal Code only applies this standard to new multi-family construction.

## **G. APPLY THE STATE'S NOISE INSULATION REQUIREMENTS TO THE CONVERSION OF EXISTING APARTMENTS INTO CONDOMINIUMS**

*Discussion* -- As stated earlier in the Noise Element, The state noise insulation standards apply to all new multi-family dwelling units. The existing City Code exempts condominium conversions from requirements relating to noise insulation. The City should apply these standards to all new projects that involve the conversion of existing apartments into condominiums. These standards limit intrusive noise by setting minimum ratings for the sound transmission of party walls and floor/ceiling separations between units.

In addition, the noise insulation standards specify a maximum interior noise exposure of 45 dB Ldn. This level may be accomplished as indicated in Policy F. As stated in the noise insulation standards, an analysis should be required for conversion projects within the 60 dB contour of freeways, highways, arterials, airports and rail lines within the community. This analysis should indicate the existing and projected Ldns on the site and the method(s) by which the noise is to

be reduced or controlled so that the Ldn of the interior living spaces of the project does not exceed 45 dB.

*Action -- The City will adopt the state noise insulation standards to limit intrusive noise levels for all new condominium conversion projects within the City.*

## **H. CONSIDER NOISE CONTROL REQUIREMENTS FOR ALL NEW EQUIPMENT PURCHASES**

*Discussion -- Various City departments may be involved in the procurement of noise producing equipment, such as compressors, air conditioners, and other fixed and mobile machinery. These types of operating equipment may be purchased with the necessary noise-abating equipment installed. Bids for the purchase of such equipment should include noise specifications in the procurement documents.*

*Action -- Noise levels produced by equipment will be considered a factor in the procurement process.*

## **I. ENSURE THAT FUTURE PROJECTS WITHIN THE CITY WILL REFLECT A CONSCIOUSNESS ON THE PART OF THE CITY REGARDING THE REDUCTION OF UNNECESSARY NOISE NEAR NOISE-SENSITIVE AREAS, SUCH AS PARKS, HOSPITALS, LIBRARIES, CONVALESCENT HOMES, ETC.**

*Discussion -- As the existing and projected noise contours developed for this Noise Element indicate, the airport, trains and traffic are major sources of noise in the City. These contours should be used in conjunction with specific site evaluations to evaluate the suitability of a site for a particular use. The environmental review process helps assess the suitability of a site for a sensitive use and proposes mitigation where necessary. Environmental impact reviews with satisfactory noise assessments have the additional value of helping to monitor localized noise conditions. The noise-related environmental impact issues should include:*

- Annoyance: Excessive noise is socially disruptive and may be physically and psychologically damaging.
- Economics: Excessive noise adversely affects property values and levels of productivity. In the past, the costs of excessive noise from transportation facilities have been passed on to those in the vicinity rather than be borne by the producer of the noise.

*Action* -- The City will maintain liaison with transportation agencies such as Caltrans regarding the reduction of noise from existing facilities. The design and location of new facilities will be considered in terms of their noise environment. Consideration will be given to buffering noise-sensitive areas from noise-generating land uses. An environmental assessment will be required for every sensitive use proposed in a noise impact area. Close attention will be paid to the noise evaluation in environmental impact assessments.

**J. PERIODICALLY REVIEW AND UPDATE THE CITY'S NOISE ORDINANCE TO REFLECT CHANGES IN STATE LAW AND PUBLIC CONSCIOUSNESS CONCERNING NOISE**

*Action* -- The City will augment existing ordinances where necessary and investigate the adoption of a more encompassing noise ordinance. Changes to the existing Code could include reorganization, consistency in noise level standards, designation of enforcement officer and enforcement procedures, addition of interior noise level standards, as well as various other changes which will make the City's noise ordinance more comprehensive and effective.

**K. IMPLEMENT A REVIEW PROCESS CONCERNING POLICIES AND REGULATIONS AFFECTING NOISE**

*Action* -- The City's Community Development Department will undertake a review of ongoing policies and ordinances at least every five years or as new technological developments warrant, per state guidelines requirements.

**L. ENCOURAGE CITY AGENCIES TO OBSERVE THE STATE AND FEDERAL OCCUPATIONAL SAFETY AND HEALTH NOISE STANDARDS**

*Discussion* -- Occupational noise standards range from the use of ear protectors for operators of equipment to the control and use of equipment within the City's jurisdiction. Such regulations are found within the Public Works Department. These laws stem from both state and federal guidelines concerning occupational and community safety and health and are included in the City's employment manual.

*Action* -- The City will encourage the enforcement of all state and federal safety and health regulations.

**M. ENFORCE REGULATIONS (SUCH AS THE STATE VEHICLE CODE NOISE STANDARDS) FOR ALL PRIVATELY-OWNED, CITY-OWNED AND CITY-OPERATED AUTOMOBILES, TRUCKS AND MOTORCYCLES OPERATING WITHIN BURBANK**

*Discussion* -- In general, the control of noise is most effectively accomplished by reduction of emissions from the source. However, the predominant source of noise within the City (motor vehicles) is under the jurisdiction of the state. Furthermore, the reduction of noise from this source by the use of barriers is very expensive and often difficult to achieve. The state now has a noise regulation as part of the Vehicle Code. The City should encourage its enforcement, particularly along the freeways. The EPA has also established a policy for the regulation of vehicle noise. The specific regulations establish noise standards for new trucks, cars and motorcycles. Some benefit may be experienced within portions of the City by this action within the next six to ten years.

*Action* -- The City will encourage all law enforcement agencies operating within the City limits to enforce the State Vehicle Code noise standards. In addition, the City will explore noise control measures to reduce the noise impacts resulting from trash pick-ups and encourage the implementation of such measures.

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## **DEFINITIONS**

The following common terms are used throughout the Noise Element.

*Ambient Noise:* The composite of noise from all sources near and far. In this context, the ambient noise level constitutes the normal or existing level of environmental noise at a given location.

*Amplitude:* A measure of the difference between atmospheric pressure (with no sound present) and the total pressure (with sound present). Although there are other measures of sound amplitude, sound pressure is the fundamental measure. The unit of sound pressure is the decibel (dB).

*A-Weighted Sound Pressure Level [dB(A)]:* The sound pressure level, in decibels, as measured on a sound level meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the response of the human ear and gives good correlation with subjective reactions to noise.

*Community Noise Equivalent Level (CNEL):* The average equivalent A-weighted sound level during a 24-hour day obtained by adding five decibels to the hourly noise levels measured during the evening (from 7:00 p.m. to 10:00 p.m.) and by adding ten decibels to the hourly noise levels measured during the night (from 10:00 p.m. to 7:00 a.m.). In this way, CNEL takes into account the lower tolerance of people for noise during evening and nighttime periods.

*Day-Night Sound Level (Ldn):* The measure of noise exposure used by the EPA, HUD, FAA and the Department of Defense. It is the same as CNEL except that the weighting considered (in CNEL) between the hours from 7:00 p.m. to 10:00 p.m. is eliminated. Throughout this noise element, Ldn and CNEL are assumed to be the same measure. This is consistent with the recommended practice of the State of California Office of Noise Control.

*Decibel (dB):* A unit for describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals. Because they are logarithmic, decibels are not additive. If two similar noise sources produce the same amount of noise (say 100 dB each), the total noise level will be 103 dB, not 200 dB. An increase in noise level of 10 dB is generally perceived as being twice as loud.

*Exterior Living Space:* Open area designed for outdoor living and/or recreation.

*Maximum Noise Level:* The maximum instantaneous noise level that occurs during a specific time interval. In acoustics, the maximum sound pressure level is understood to be for single events unless some other kind of level is specified.

*Noise:* Annoying, harmful or unwanted sound.

*Noise Barrier:* A structure designed to mitigate the impact generated by a noise source (e.g., an arterial or rail line) at an adjacent noise-sensitive location. Barriers should be continuous structures (without gaps) and should be constructed of a material that is impervious to noise (e.g., concrete block, stucco on wood, wood on wood, 1/4-inch tempered plate glass, earthen berm, or any combination of these materials).

*Noise Contour:* A line drawn about a noise source indicating constant levels of noise exposure. Ldn is the metric utilized herein to describe community exposure to noise.

*Noise Impact Area:* A specific area exposed to significant levels of noise.

*Noise Reduction:* The ability of a material to reduce the noise level from one place to another or between one room and another. Noise reduction is specified in decibels.

*Noise-Sensitive Land Uses:* Noise-sensitive land uses include, but are not limited to: residences, schools, libraries, hospitals, churches, offices, hotels, motels, and outdoor recreational areas. These typify land uses where suitability is restricted by intrusive noises. Hence, they are termed "noise-sensitive". Noise sensitivity factors include interference with speech communication, subjective judgment of noise acceptability and relative noisiness, need for freedom from noise intrusion, and sleep interference criteria. The Land Use Element of the General Plan provides a description of the residential areas throughout the City and is considered the source for the inventory of the noise-sensitive areas.

*Sound:* As used herein, sound is a reaction in the ear caused by radiant energy being transmitted from a source by longitudinal pressure waves in air or some other elastic medium.

*Sound Level Meter:* A measurement instrument containing a microphone, an amplifier, an output meter, and one or more frequency weighting networks. It is used for the determination of sound levels.

### EFFECTS OF NOISE ON PEOPLE

Whether a sound is a noise or not will depend on the source of the sound, the loudness relative to the background noise, the time of day, the situation, and the listener. The difference in our reactions is explained by the perceived noisiness, or how undesirable the sound is. An unwanted sound may be extremely irritating though it is not unreasonably loud. Recent studies have documented more serious effects of noise than annoyance; among them are slow, permanent hearing loss and physical and psychological stress.

While permanent deafness is sometimes caused by a single, very loud noise, most noise induced hearing loss research has been done in the fields of industrial noise and "hard rock" music where there is a widespread, periodic exposure to high levels of sound. Two main findings have come out of these studies. First, though the human ear registers a hearing loss after a few hours of exposure to loud noise, its flexibility is such that normal hearing may be completely regained after several hours' rest. Second, constant noise with no rest or frequent exposure to high noise levels over a period of several years will destroy the ability of the ear to recover its normal hearing. What this means is that infrequent exposure to loud noises can actually be less harmful than continuous exposure to a lower, constant noise level. Furthermore, the damage caused by, say, exposure to loud industrial noise during an eight-hour day, will be covered by the Federal Worker's Compensation Act while that caused by exposure to freeway noise over a 24-hour day receives no compensation at all.

Noise is also a contributing factor in medical stress. While the ability to respond quickly to messages can be beneficial to self-preservation, unnecessary arousal by irrelevant noises can interfere with efficiency, train of thought, and peace of mind. Human response to frequent noises loud enough to startle or alarm has been linked to such chronic stress symptoms as low resistance, high blood pressure, exhaustion and ulcers.

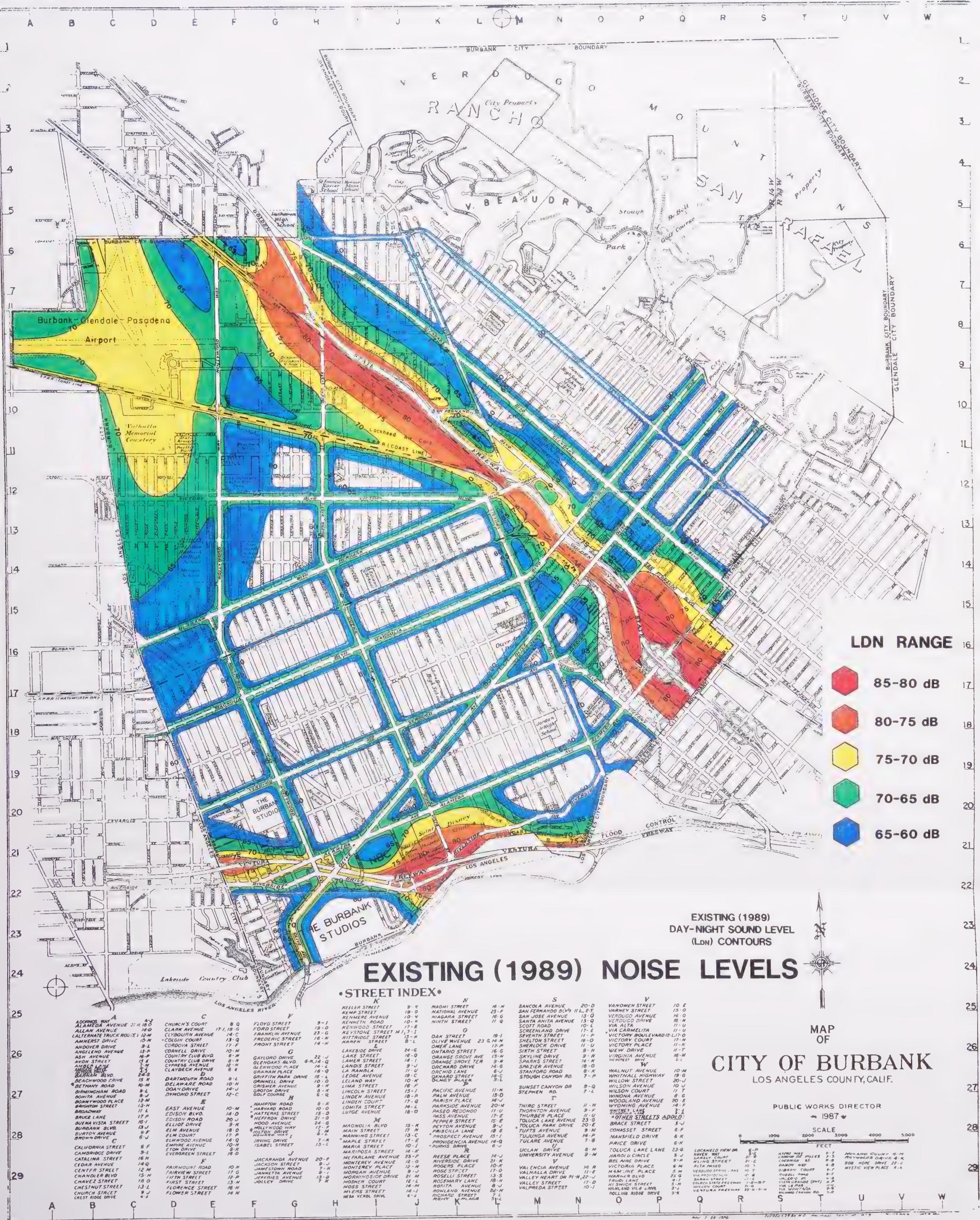
Speech interference has been a criterion for a great deal of noise research. Background noise interference naturally contributes to the misunderstanding of spoken communications when one word or more out of a sentence is masked by noise. It can reduce learning in the classroom and job efficiency at the office by forcing voices to be raised. Social psychologists say it may be a large factor in interpersonal friction or arguments. A high degree of speech interference may be accompanied by social disruption and a downgrading of the quality of life.

A consequence of even relatively low noise levels is sleep interference--people being awakened or kept from going to sleep by noise. A high percentage of community complaints against noisy generators stem from sleep interference. Steady, droning noise tends to be less disturbing than fluctuating noise levels. Sleep studies have linked interrupted rest to personality change and physiological deterioration.

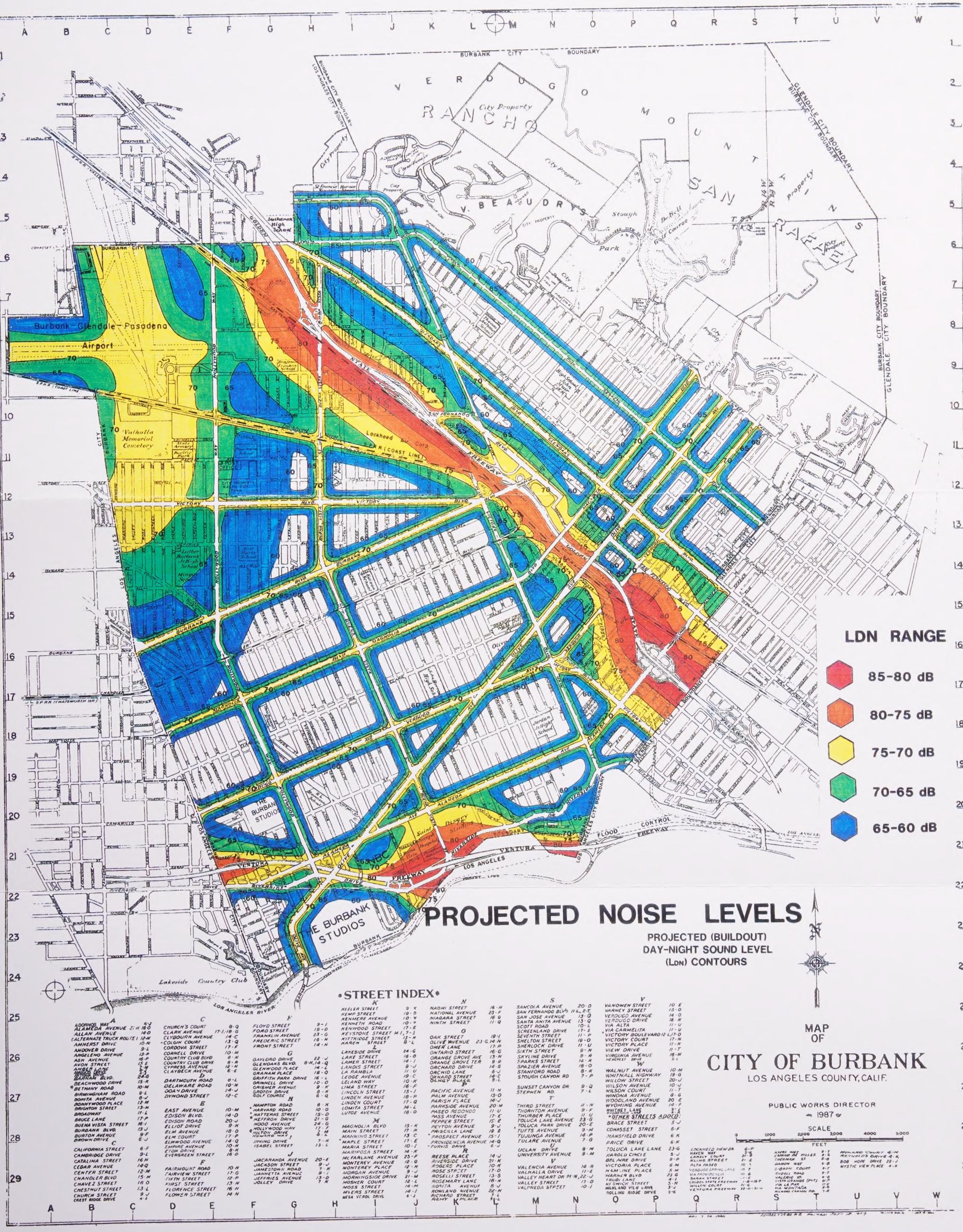
As a matter of public health and community preference, noise pollution must be controlled. The latest findings of physical and emotional effects have mobilized many state and county health departments to strongly recommend a clampdown on noise levels. The areas most vulnerable to the harmful effects of sound seem to be residential communities, particularly at night, but all human activities can be adversely affected by noise.

Effects of noise on real estate values have not been as systematically explored as have been the effects of noise on humans. Federal findings indicate that high noise levels will bring down the economic quality and value of homes, stores and offices, and this conclusion has led to the U.S. Department of Housing and Urban Development's (HUD) directive to withhold funding from projects that do not comply with acceptable noise standards. HUD's concern is divided between adverse effects on humans and economic losses. HUD, therefore, encourages the control of noise sources as well as the control of land use patterns for housing and other municipal needs, thus separating uncontrollable noise sources from residential and other noise-sensitive areas.











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